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Report No. 3746

**Site Survey Report for an ACCAT Remote Site Module
at the Naval Postgraduate School**

Revised October 1978

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Prepared for:
Defense Advanced Research Projects Agency

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REPORT

SITE SURVEY FOR AN ACCAT REMOTE SITE MODULE
AT THE NAVAL POSTGRADUATE SCHOOL

Revised October 1978

Submitted to:

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REMOTE SITE MODULES
NAVAL POSTGRADUATE SCHOOL

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1. Overview

→ This report was prepared as part of remote site planning activity for the joint ARPA/Navy Advanced Command Control Architectural Testbed (ACCAT) program. It deals with the site planning for the installation of an ACCAT remote site module (RSM) at the Naval Postgraduate School, Monterey California. ←

This RSM will have access to the ACCAT secure subnet of the ARPANET, hence a PLI and secured environment will be required.

The network connection will be through a TIP which will be installed in the Church Computer Center (building 135). The RSM will be located in Room 152, which will be secured to the level of Top Secret.

One advantage of the TIP/PLI connection will be its ability to allow non-secure access to the ARPANET, through the TIP Multi-line Controller, as well as secure access to the subnet through the RSM/PLI.

The various system components will be initially shipped to BBN to be integrated and tested. At this time, all equipment will go through an acceptance test to insure that all units are complete and reliably operational.

All interconnecting cables will be tested by BBN, with the exception of IMP and PLI cables which will be tested on the site.

When the hardware and software checkout is complete, the system will be shipped to NPS for reinstallation.

2. Equipment List RSM/NPS

DEC Equipment

| Item | Qty. | Model No. | Description |
|------|------|------------|---|
| 1 | 1 | CM70CVA-LA | PACKAGED SYSTEM CONSISTING OF: <ul style="list-style-type: none"> • PDP-11/70 computer • 256K bytes parity core • 2K byte bipolar cache • Bootstrap/Diagnostic Loader • Line Frequency Clock • DECwriter II terminal • Terminal Control • Two cabinets (one for CPU, one for memory) • RWP06-AA - 176M byte disk and control <ul style="list-style-type: none"> • TWE16 - 1600 bpi magtape and control |
| 2 | 1 | RP06-AA | Single access 176 Mbyte disk drive. |
| 3 | 1 | TE16-EE | Slave Drive, 9 track |
| 4 | 1 | FP11-C | Floating Point Unit |
| 5 | 1 | H960-DH | Cabinet with 9 SU expander box |
| 6 | 1 | DH11-AD | Complete asynchronous programmable multiplexer. EIA/CCITT does not include cables. |
| 7 | 1 | DZ11-E | 16 line asynchronous multiplexer for EIA/CCITT terminals. |
| 8 | 1 | DD11-DK | Backpanel |
| 9 | 1 | IMP11-A | Special Interface |
| 10 | 1 | 11/03 | 11/03 Processor (to control joystick input to Genesco unit). |

Genisco Equipment

| | | | |
|----|---|-------------|---------------------------------|
| 11 | 3 | GTC-3011 | Programmable Graphics Processor |
| 12 | 6 | GTC-3026-8 | MOS RAM refresh memory module |
| 13 | 3 | GTC-3041 | Chassis and power supply |
| 14 | 3 | GTC-3030 | Basic video control |
| 15 | 3 | GTC-3032-3 | Monitor control |
| 16 | 3 | GTC-3038-X | Hardware char/vector generator |
| 17 | 3 | GTC-3052 | DEC PDP11 Interface |
| 18 | 3 | GTC-3052A | 10 foot unibus & terminator |
| 19 | 3 | GTC-3071 | ASCII keyboard w/function keys |
| 20 | 3 | GTC-3073 | Joystick (RS232) |
| 21 | 3 | GTC-3084 | 25" RGB Monitor (w/yoke studs) |
| 22 | 9 | GTC-3094-75 | Video cable (75') |
| 23 | 6 | GTC-3096-75 | RS232 cable |

Tektronik Equipment

| | | | |
|----|---|------------------|--|
| 24 | 1 | Tektronik-4014-1 | Display terminal, with complete ASCII upper and lower case character set plus TTY subset. Screen size 15" wide by 11" high including optional hard copy unit (4631). |
|----|---|------------------|--|

Ann Arbor Equipment

| | | | |
|----|---|------------------|---|
| 25 | 6 | Ann Arbor-K4080D | Terminal with dual baud rate option, switched baud rate option and bell control (7) option. |
|----|---|------------------|---|

Tally Equipment

26 2 Tally 1612 RO serial printers.

BBN Equipment

27 1 BBN-PLI Private line interface.

28 1 BBN-TIP Terminal IMP, with console TTY,
and paper tape reader
(optional).

Bell Equipment

29 1 Bell 303 50 Kilo-bit MODEM

3. Physical Configuration

| BAY 1 | BAY 2 | BAY 3 | BAY 4 | BAY 5 | BAY 6 |
|------------------------|------------------------|-------|--|-----------|------------------------|
| TWE16-EE TAPE DRIVE | TWE16-EE TAPE DRIVE | | | | |
| | | | 11/70 CPU ● FP11C ● CONTROLLER RP06 TE16 | DH11 UNIT | |
| | | | 11/70 MEMORY | | |
| | | | | 11/03 CPU | GENESCO PROCESSOR 1 |
| | | | | | GENESCO PROCESSOR 2 |
| | | | | | GENESCO PROCESSOR 3 |

Figure I
Physical Configuration NPS/RSM

4. Floor Plan

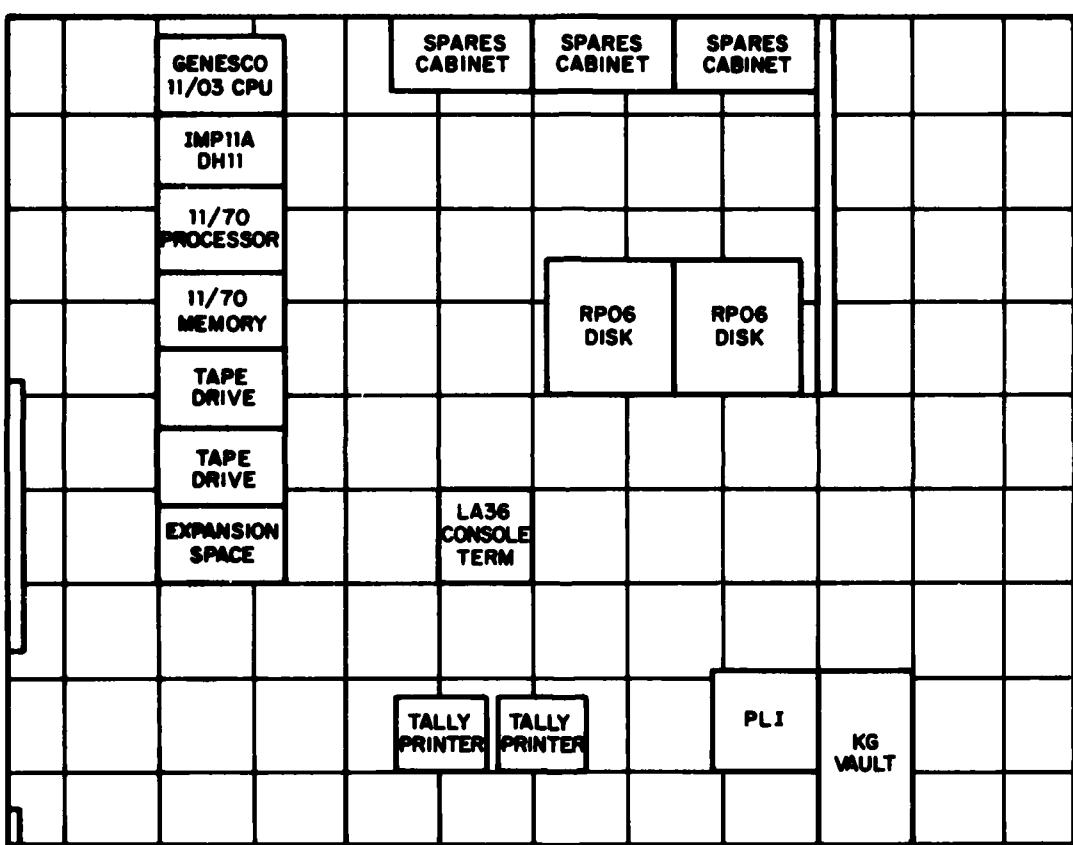


Figure II
Floor Plan NPS/RSM

5. Inter-connecting Cable Specification

| Cable Name | Mfg. | Part No. | Length |
|---------------------|---------|---------------|-------------|
| *Distant Host Cable | BBN | Dst. Hst. CBL | 100 feet |
| *PLI to KG | BBN | FKGA | 30 feet |
| *PLI to KG | BBN | 4FBNC-B | 30 feet |
| *PLI to KG | BBN | 4FBNC-B | 30 feet |
| TIP to Modem Cables | BBN | Modem Cable | 25 feet |
| GCT - Monitor Coax | Genisco | GTC-3094 | 75 feet |
| GCT - Unibus Cable | Genisco | GTC-3052A | 10 feet |
| DEC System Unibus | DEC | As required | As required |

* Cables must be enclosed in conduit for portion of run which is within secure area.

6. Power Requirements NPS/RSM

Power Requirements

NPS/RSM

5/18/78

| <u>Equipment</u> | <u>Receptical</u> | <u>*Breaker</u> | <u>Voltage</u> | <u>**Phase</u> | <u>Normal Amps</u> | <u>Watts</u> | <u>BTU/hr</u> |
|-------------------|-------------------|-----------------|----------------|----------------|--------------------|--------------|---------------|
| Bay 1 | 2610 | 30A | 115 | Single | 8 | 1000 | 3400 |
| Bay 2 | 2610 | 30A | 115 | Single | 8 | 1000 | 3400 |
| Bay 3 | 2810 | 30A | 115/208 | 3-phase | 3 | 900 | 3060 |
| Bay 4 | 2810 | 30A | 115/208 | 3-phase | 5 | 1725 | 5865 |
| Bay 5 | 2610 | 30A | 115 | Single | 8 | 1000 | 3400 |
| Bay 6 | 2610 | 30A | 115 | Single | 25 | 2915 | 9911 |
| RP06-1 | 2510 | 20A | 115/208 | 3-phase | 6 | 2100 | 7000 |
| RP06-2 | *** | | 115/208 | 3-phase | 6 | 2100 | 7000 |
| Tally Printer-1 | 5262 | 10 | 115 | Single | 2 | 200 | 680 |
| Tally Printer-2 | 5262 | 10 | 115 | Single | 2 | 200 | 680 |
| Tektronix 4014 | 5262 | 10 | 115 | Single | 2 | 200 | 680 |
| Ann Arbor-1 | 5262 | 10 | 115 | Single | 2 | 200 | 680 |
| Ann Arbor-2 | 5262 | 10 | 115 | Single | 2 | 200 | 680 |
| Ann Arbor-3 | 5262 | 10 | 115 | Single | 2 | 200 | 680 |
| Ann Arbor-4 | 5262 | 10 | 115 | Single | 2 | 200 | 680 |
| Ann Arbor-5 | 5262 | 10 | 115 | Single | 2 | 200 | 680 |
| Ann Arbor-6 | 5262 | 10 | 115 | Single | 2 | 200 | 680 |
| GTC Keyboard | *** | | | | | | |
| GTC Joystick | PLI | 20 | 115 | Single | 6 | 2100 | 7140 |
| 316 TIP | 3331G | 30 | 115 | Single | 6 | 2100 | 7140 |
| Concole TTY (TIP) | 5262 | 10 | 115 | Single | 2 | 230 | 782 |
| 303 MODEM | 5262 | 15 | 115 | Single | 2 | 575 | 1955 |
| PTR (TIP) | 5262 | 10 | 115 | Single | 2 | 230 | 782 |
| KG34 | 5262 | 10 | 115 | Single | 1 | 110 | 143 |
| CONRAC Monitor | 5262 | 10 | 115 | Single | 1.5 | 180 | 612 |
| CONRAC Monitor | 5262 | 10 | 115 | Single | 1.5 | 180 | 612 |
| CONRAC Monitor | 5262 | 10 | 115 | Single | 1.5 | 180 | 612 |
| | | | | | | 20,425 | 69,445 |

* Breaker sizes are determined by the equipment manufacturer and in some cases may not closely relate to the amperage requirements of the specific device in its most basic form. Additional capacity is built into the power wiring to allow for future expansion of the device or cabinet.

** All 3 phase circuits must be WYE connected.

*** Device powered from its controller, no receptical required.

7. Secure PLI Physical Characteristics (Prepared from BBN Report No. 1822)

The secure Private Line Interface is contained in a TEMPEST-approved rack, approx. 66H x 25W x 29D, as shown in Figure 3. The total weight of the system is between 600 and 700 lbs. The top half contains the Red portion and the bottom half contains the Black portion along with a paper tape reader. The reader can be used to load programs into either half (with the rack doors open). A horizontal bulkhead separates the two halves of the rack; a filter box containing optical isolators, feed through capacitors, and TEMPEST filters is provided in the bulkhead. Each half of the rack contains space to allow an additional Pluribus computer chassis; consequently the rack is considerably larger than the minimum required size for current configurations of the PLI.

A sealed symmetrical powerline filter in the base of the enclosure allows the PLI to operate from a single power source, either Red or Black, at the convenience of the installing site. The enclosure has been designed, tested, and certified for installation in either a TEMPEST-Red or TEMPEST-Black environment, provided that the appropriate signals are contained in conduit as specified below.

The PLI is designed to interface with an externally located KG-34, which must have the following options:

- (1) 110 Volt AC power
- (2) Low Speed
- (3) Message Indicator; no A/S
- (4) Data transition on positive clock transitions
(See the KG-34 manuals for strap option on two KG cards.)
- (5) Eight bit MI pattern (two front panel switches).